

Claims

1. An ink for ink jet recording, comprising an aqueous medium and a magenta dye dissolved or dispersed in the aqueous medium, the magenta dye being selected from azo dyes,

5 wherein the magenta dye has an absorption maximum in a spectral range of from 500 to 580 nm in the aqueous medium and an oxidation potential of more positive than 1.0 V (vs SCE).

10 2. The ink for ink jet recording according to Claim 1,

 wherein the azo dye has a chromophore represented by the following formula:

 (heterocyclic ring A) -N=N- (heterocyclic ring B)

15 wherein, the heterocyclic ring A and the heterocyclic ring B may be a same structure.

3. The ink for ink jet recording according to Claim 1 or 2,

20 wherein the azo dye contains an azo group having an aromatic nitrogen-containing 6-membered heterocyclic ring that is directly connected to at least one end of the azo group as a coupling component.

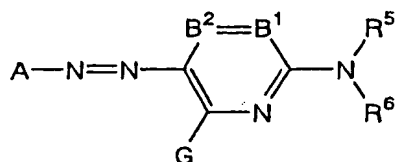
25 4. The ink for ink jet recording according to any one

of Claims 1 to 3, wherein the azo dye has one of an aromatic cyclic amino group and a heterocyclic amino group-containing structure as an auxochrome.

5 5. The ink for ink jet recording according to any one of Claims 1 to 4, wherein the azo dye has a stereostructure.

6. The ink for ink jet recording according to any one of Claims 1 to 5, wherein the azo dye is a dye represented
10 by the following formula (1):

Formula (1)



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wherein A represents a 5-membered heterocyclic ring group;
B¹ and B² each represents =CR¹- or -CR²= or one of B¹ and B²
represents a nitrogen atom while other represents =CR¹- or
-CR²=; R⁵ and R⁶ each independently represents a hydrogen atom
20 or a substituent which is an aliphatic group, an aromatic
group, a heterocyclic ring, an acyl group, an alkoxycarbonyl
group, an aryloxy carbonyl group, a carbamoyl group, an
alkylsulfonyl group, an arylsulfonyl group or a sulfamoyl
group, a hydrogen atom of the substituent may be substituted;
25 G, R¹ and R² each independently represents a hydrogen atom

or a substituent which is a halogen atom, an aliphatic group, an aromatic group, a heterocyclic ring group, a cyano group, a carboxyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxy carbonyl group, a heterocyclic oxycarbonyl group, an acyl group, a hydroxy group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, a silyloxy group, an acyloxy group, a carbamoyloxy group, an alkoxycarbonyloxy group, an aryloxy carbonyloxy group, an amino group, an acylamino group, an ureido group, a sulfamoylamino group, an alkoxycarbonylamino group, an aryloxy carbonylamino group, an alkylsulfonylamino group, an arylsulfonylamino group, a heterocyclic sulfonylamino group, a nitro group, an alkylthio group, an arylthio group, a heterocyclic thio group, an alkylsulfonyl group, an arylsulfonyl group, a heterocyclic sulfonyl group, an alkylsulfinyl group, an arylsulfinyl group, a heterocyclic sulfinyl group, a sulfamoyl group or a sulfo group, wherein a hydrogen atom of the substituent may be substituted; and R^1 and R^5 or R^5 and R^6 may be connected to each other to form a 5- or 6-membered ring.

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7. The ink for ink jet recording according to any one of Claims 1 to 6,

wherein the ink has an ozone fading rate constant of a recorded image, the ozone fading rate constant is $5.0 \times 10^{-2} \text{ [hr}^{-1}\text{]}$ or less.

8. The ink for ink jet recording according to any one of Claims 1 to 7, which has a viscosity of from 1 to 20 mPa·sec at 25°C.

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9. The ink for ink jet recording according to any one of Claims 1 to 8, which has a static surface tension of from 25 to 50 mN/m at 25°C.

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10. The ink for ink jet recording according to any one of Claims 1 to 9, which has an electrical conductance of from 0.01 to 10 S/m.

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11. The ink for ink jet recording according to any one of Claims 1 to 10,

wherein a change of a viscosity and a surface tension of the ink from at 25°C to at 10°C are 250% or less and 130% or less, respectively.

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12. The ink for ink jet recording according to any one of Claims 1 to 11,

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wherein the ink has no visibly detectable bleeding on an image-receiving material at a visible distance, the image-receiving material comprises an image-receiving layer on a support, and the image-receiving layer contains a white

inorganic pigment particle.

13. The ink for ink jet recording according to any one of Claims 1 to 12,

5 which has no visibly detectable bleeding on an image-receiving material at a visible distance, the image-receiving material comprising a gelatin-containing hardened layer as an image-recording layer.

10 14. A method for producing the ink for ink jet recording according to any one of Claims 1 to 13,

 which comprises a step of dissolving or dispersing the azo dye according to any one of Claims 1 to 6 in the aqueous medium with an ultrasonic agitation.

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15. A method for producing the ink for ink jet recording according to any one of Claims 1 to 13,

 which comprises steps of: filtering the aqueous medium having the azo dye according to any one of Claims 1 to 6
20 dissolved or dispersed in the aqueous medium through a filter having an effective pore diameter of 1 μ m or less; and defoaming the filtered aqueous medium.

16. An ink jet recording method using the ink for ink
25 jet recording according to any one of Claims 1 to 13.

17. The ink jet recording method according to Claim
16,

wherein an ink droplet is ejected onto an
5 image-receiving material in accordance with a recording
signal so that an image is recorded on the image-receiving
material by using the ink for ink jet recording according
to any one of Claims 1 to 13, the image-receiving material
comprising an image-receiving layer on a support, the
10 image-receiving layer containing a white inorganic pigment
particle.

18. The ink jet recording method according to Claim
17,

15 wherein the image-receiving layer contains the white
inorganic pigment particle and at least one aqueous binder
selected from a polyvinyl alcohol, a silanol-modified
polyvinyl alcohol, a starch, a cationated starch, a gelatin,
a carboxyalkyl cellulose, a casein and a polyvinyl
20 pyrrolidone.

19. The ink jet recording method according to Claim
18, wherein the image-receiving layer further contains a
mordant selected from a polyaluminum chloride, a chromium
25 compound and an azo dye-mordanting group-containing polymer.